COMMENTARY

Addressing inappropriate antibiotic prescribing in China

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Antibiotic resistance is now a major health threat globally; it results in increased costs of treatment, higher than expected mortality rates for infectious diseases, and difficulty in preventing infection. Although antibiotic resistance occurs naturally, misuse and overuse of antibiotics in humans and animals has worsened the emergence and spread of antimicrobial resistance.[1]

Antibiotic resistance is higher in China than in Western countries and there has been alarming growth in the prevalence of resistant bacteria.[2] After India, China is the largest consumer of antibiotics in the world.[3] Excessive quantities of antibiotics are prescribed for both inpatients and outpatients, particularly in pediatric clinics and primary care settings.[4,5] Combatting antibiotic resistance has become a priority in the Chinese health care system since the development of the World Health Organization's 5 strategic objectives to address antibiotic resistance.[1]

The determinants of inappropriate prescribing of antibiotics in China are complex and include insufficient training, poor clinical behaviour of medical professionals, patients' beliefs, deficiencies in health care organizations and the sociocultural environment.[6] Although primary care facilities account for an estimated 65% of outpatient visits in China, many Chinese people receive outpatient care from hospital clinics, which derive a considerable amount of their revenue from drug sales. Physicians also receive bonuses tied to the revenue they bring in. The Chinese government piloted various reforms intended to reduce these financial incentives, such as establishing a national essential medicines list and removing pharmacies from hospitals. However, these measures have not proven effective in curbing overprescribing, probably owing to a lack of alternatives for financial compensation from the government and additional kickbacks from pharmaceutical companies.[7] Despite China's zero-profit drug policy (all public health care facilities are required to sell drugs at cost), physician compensation has not yet been separated from revenue generated from prescription medications.

Data from the national nosocomial infection surveillance system shows that, between 2001 and 2010, the overuse of antibiotics and antibiotic resistance was more severe in primary care facilities than in secondary and tertiary hospitals.[8] Limited knowledge and expertise of medical staff in primary care settings contribute to the improper use of antibiotics. Concerns about secondary bacterial infections after viral infections can lead to the prescribing of antibiotics as a preventive measure. Moderate to no compliance with clinical antimicrobial guidelines in daily practice also contributes to the misuse of antibiotics.[5,8]

KEY POINTS

- Overuse of antibiotics is a major driver of antibiotic resistance around the world; antibiotic resistance is higher in China than in Western countries.
- China is the second largest consumer of antibiotics in the world, with a high rate of antibiotic overprescribing for inpatients and outpatients in pediatric clinics and primary care settings, compared with Western countries.
- Despite China's zero-profit drug policy, financial incentives and kickbacks for physicians from pharmaceutical companies are among the main drivers of abuse of antibiotics in China.

Other contributing factors include patients' and caregivers' knowledge and attitudes. A considerable number of patients in China still demand antibiotics even when a health care practitioner knows they are unlikely to be effective. Busy physicians may be more likely to write prescriptions than educate patients on appropriate use of antibiotics.[9] A common perception that associates the novelty and cost of an antibiotic with better efficacy also increases demand and use.[10] The use of leftover antibiotics at home, and antibiotic sales without a prescription in retail pharmacies, also drive improper use. Self-medication with nonprescription drugs including antibiotics is common among youth in China,[11] with lack of regulation of medical drugs, and poor understanding of adverse effects contributing to their misuse.

Containment of inappropriate prescribing and use of antibiotics is an urgent priority for the Chinese government. In recent years, reforms, regulations and strategies have been developed with the aim of curbing antimicrobial use in China, but their implementation in clinical practice has lagged. Poor implementation of policy can be attributed, in part, to the complexity of China's health system.

Following the publication of national antimicrobial guidelines, the establishment of institutional antibiotic stewardship programs,

local protocols and comprehensive infection control measures are key interventions to reduce consumption of antibiotics. Improved training of health care providers, effective supervision of antibiotic prescribing, and feedback on prescribing behaviours of medical staff would help to curb the inappropriate use of antibiotics in Chinese primary health care facilities.

In addition, it is important to address the link between prescribing of antibiotics and financial incentives for institutions and professionals. Increasing physician income from other government sources to maintain physicians' benefits and satisfaction may complement regulation to limit antibiotic overprescribing. Any national or regional program aimed at promoting appropriate use of antibiotics should address the public as well as health care professionals. Large-scale media and social campaigns, highlighting the link between antibiotic use and bacterial resistance, could help to improve knowledge and attitudes about appropriate use of antibiotics in China as in other countries.

The consequences of antibiotic resistance reach far beyond the human health sector. No one government or agency can be held solely responsible for managing the problem. Close international cooperation and coordinated efforts across multiple sectors are required to address the complexity of antibiotic resistance and implement strategies to fight against this global threat.

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